

1.0 PLANNING

The successful collection of environmental data requires planning. The following planning guidance is based on the current quality system documents from the U.S. Environmental Protection Agency (EPA) (Ref 1).

1.1 QUALITY MANAGEMENT PLAN

A quality management plan (QMP) outlines or specifies all quality management activities for a specific program or organization (Ref 2). The EPA QMP requires conformance with ANSI/ASQC Standard E4 (Ref 3). The QMP defines the policies, criteria, roles and responsibilities for a program. The guidance in this User's Manual is consistent with the current US EPA-approved quality plan.

1.2 QUALITY ASSURANCE PROJECT PLAN AND DATA QUALITY OBJECTIVES (DQOs)

A quality assurance project plan (QAPP) is a project-specific document which includes project objectives plus sampling and analytical methods needed to accomplish the objectives. A critical part of the process is the development of **Data Quality Objectives (DQOs)**, which are project-specific objectives, based on the acceptable levels of error for the project. Guidance for DQOs development is described in Reference 4.

DQOs must include both the process needed to obtain the product, and quality specifications of the product. DQOs should specify the quality of the data required to support the decisions making by the regulatory agencies. The DQO development process consists of the following seven steps:

- Step 1. State the Problem
- Step 2. Identify the Decision
- Step 3. Identify the Inputs to the Decision
- Step 4. Define the Study Boundaries
- Step 5. Develop a Decision Rule
- Step 6. Specify Acceptable Limits on Decision Errors
- Step 7. Optimize the Design for Obtaining Data

In the DQO development process, the decision makers, data users, and individuals responsible for data collection should be identified and communication among the parties should be established. Continual communication among these parties is essential to the success of the project. Next, all available information on the site should be evaluated to gain an understanding of the site. With this information in hand, the current situation at the site should be described. Finally, the problems to be solved are identified.

In step 3, the tasks at hand as seen by the data users are stated and then the data types such as physical and chemical parameters are identified; the data quality needs are specified. These include prioritization of data uses, contaminants of concern, levels of concern (e.g., hazardous waste criteria, risk-based screening levels, etc.), required quantitation limits, and critical measurements. Next the sampling and analysis options are evaluated to maximize the use of the data. Finally, the precision, accuracy, representativeness, completeness, comparability, and other data quality indicators are specified.

The final step is optimizing the design of the data collection program. Here data collection components are assembled and needed measurements are listed.

Once DQOs are developed, a QAPP and/or SAP is prepared to document the activities to ensure that data collection programs will produce data of the type and quality required to satisfy the DQOs. The role of the regulatory agencies is to review, comment, and approve QAPPs and SAPs. The actual preparation of the plans are often the responsibility of contractors or responsible parties.

A project plan should address the items stated below. This manual provides guidance for the essential elements of a project plan. Regardless of the size of the project, a project plan should establish the objectives and scope of the project and define how these objectives will be accomplished.

The development and implementation of project plans may require a multi-disciplinary approach. Regulatory agencies must take the necessary precautions to assure that the overall integrity of a study is maintained during all its phases. A QAPP may be submitted as part of a Sampling and Analysis Plan (SAP) or as a separate document.

The current EPA QAPP guidance (Ref. 5) includes these elements:

- A. Project Management
- B. Measurement/Data Acquisition
- C. Assessment/Oversight
- D. Data Validation and Usability

The information required for an actual project will depend on the nature of the work.

1.3 SAMPLING AND ANALYSIS PLANS or (Field Sampling Plan)

Sampling and analysis plans (SAPs) are specific for each sampling and analysis episode.

Guidance for the preparation of these plans are at the local level but includes all monitoring and measurement activities specific for that episode.

The User's Manual is primarily a guidance to QAPPs and SAPs. The success of a project depends largely on planning done prior to initiating the project. QAPPs and SAPs serve as the cornerstone for the data collection activity and involve thought, research and coordination. Such plans allow the planned activities to be carried out in an organized manner in a pro-active mode rather than a reactive mode.

1.4 Waste Analysis Plans

Waste Analysis Plans (WAPs) are required for permitted facilities; A Guidance Manual can be found in reference 6.

1.5 REFERENCES

- 1) "Guidance for Developing Quality System for Environmental Programs," EPA QA/6-1, EPA/240/R-02/008, November 2002 see:
<http://www.epa.gov/quality/qs-docs/g1-final.pdf>
- 2) "Requirements For Quality Management Plans", EPA QA/R-2, EPA/240/B-01/002, US EPA Office of Environmental Information, EPA QA/6-1, EPA/240/B-01/002 Washington, DC 20460, March, 2001. See:
<http://www.epa.gov/quality/qs-docs/r2-final.pdf>
- 3) American National Standard for Quality, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," ANSI/ASQC E4-1994, January 3, 1995.
- 4) US EPA, "Guidance for the Data Quality Objectives Process", EPA QA/G-4, August 2000, US EPA Office of Environmental Information, Washington, DC 20460, see
<http://www.epa.gov/quality/qs-docs/g4-final.pdf>
- 5) US EPA, "EPA Requirements for Quality Assurance Project Plans" EPA QA/R-5, March 2001, see
<http://www.epa.gov/quality/qs-docs/r5-final.pdf>
- 6) "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste, A Guidance Manual, OSWER 9938.4-03, April, 1994
<http://www.epa.gov/compliance/resources/policies/civil/rcra/wasteanalygman-rpt.pdf>